

Patent No. 6,666,233. Claims 11 and 12 were rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over Claim 12 of U.S. Patent No. 6,666,233 in view of the Bauman patent. Claims 1 - 4, 6 - 10, 13 - 15 and 17 were rejected under 35 U.S.C. § 102(b) as anticipated by the Bauman patent. Claims 1, 2, 4, 5, 9 and 10 were rejected under 35 U.S.C. § 102(b) as anticipated by the Masui patent. Claim 16 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the Bauman patent in view of the Masui patent. Claims 11, 12 and 18 - 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Bauman patent in view of the Sorkin '139.

As an overview to the present reply, it is important to note that the present invention provides significant advantages over the prior art. The advantages of the present invention were clearly recited in the original specification. Importantly, in paragraph [0036] of the original specification, it was stated that:

In normal use, when grout is introduced into the interior passageway 16, it will begin to fill the void within the interior passageway 16. The grout will initially fill the interior of the adjacent corrugation 14 and push air bubbles outwardly therefrom. These air bubbles can migrate along the first longitudinal channels 18 and 20 toward the next corrugation 14. The grout can then flow between the corrugations 14 along the longitudinal channels 18 and 20. Eventually, the grout will fill the channels 18 and 20 and slowly move along the length of the tubular body 12. A suitable valve, or other device, can be used so as to release the migrated air from the interior passageway 16 at the end of the duct 10.

As such, it can be seen that the longitudinal channels 18 and 20 should extend along the entire length of the tubular body so as to allow the air bubbles to properly migrate therealong and to keep the air bubbles from being retained within any of the individual corrugations. Additionally,

as was stated in paragraph [0037] of the original specification, the longitudinal channels also, and rather unexpected, provide rigidity and stiffness along the length of the tubular body. This paragraph [0037] states as follows:

Importantly, the longitudinal channels 18 and 20 provide rigidity and stiffness along the length of the tubular body 12. As a result, the tubular body 12 is less likely to curl up, whip or wobble during the installation of the tendon or cable by a cablepusher. The additional stiffness provided by the longitudinal channels 18 and 20 allows a cable to be installed in a quicker and more convenient manner. There is less likelihood of duct breakage when the tendon is installed. The minimization of whip, wobble, and undulations caused by the construction of the channels 18 and 20 will further reduce the likelihood of duct breakage.

As such, it is important to provide the longitudinal channels along the entire length of the tubular body so as to assure the rigidity of the tubular body. It is important to note that the corrugations each have a flat outer surface. This flat outer surface allows the corrugations to provide contact points so as to support the tubular body on an underlying surface. In other words, curved surfaces will tend to create "points" of stress upon the tubular body and result in undulations and indentations. This feature was recited in paragraph [0038] of the original specification.

The present invention provides the flat outer surface on each of the plurality of corrugations so as to facilitate the ability to connect the ducts to a suitable self-tapping coupler. Additionally, the construction of the longitudinal channel so as to extend outwardly from the tubular body for less than the distance that the corrugations extend outwardly of the tubular body also facilitates the ability to install the duct of the present invention into suitable couplers. As was stated in paragraph [0039] of the original specification:

Additionally, the flat outer surface 32 of the corrugations 14 will provide a surface whereby the end 28 of the duct 10 can be self-

tapped into a suitable coupler mechanism or to an adjoining structure. Since the channels 18 and 20 extend outwardly of the wall portion 24 for a distance less than the distance that the flat surface 32 extends outwardly from the wall portion 24, the channels 18 and 20 will not be affected by any threaded, self-tapping engagement between the flat surface 32 and an adjoining coupler mechanism.

Applicant respectfully contends that these features serve to distinguish each of the independent claims from these recited prior art combination.

In general summary with respect to each of the prior art references, the Bauman patent describes flexible corrugated tubing. The purpose of this tubing, as recited in the Background portion of the Bauman patent, is used for "eliminating annoying whistling which occurs in conventional tubing used for moving air at relatively high velocities." The tubing of the Bauman does include a plurality of corrugations which appears to have a plurality of longitudinal channel extending therebetween. However, as can be seen in the illustration of the Bauman patent each corrugations has a completely curved outer surface. Throughout the specification, the Bauman patent is concerned with very "flexible" corrugated tubing. Such flexibility is desirable when used in association with the connecting of the sources the air or for moving air therethrough. The longitudinal channels do not appear to extend for the entire length of the tubing. The tubing appears to end in continuous end section 16 or a single corrugation. There is no suggestion in the Bauman patent for any use of this tubing in association with the receipt of cables and tendons as used in post-tension construction.

The Masui patent describes a synthetic resin hose that contains an electrically conductive wire. The purposes of the hose are indicated as used with an anti-static hose, an electric cleaner hose, a reservoir water pump hose, and similar items. Once again, flexibility of the hose is a desired

objective. The hose does include a plurality of corrugations extending outwardly therefrom. However, each of the corrugations has a continuously curved outer surface. A wire-receiving channel is formed in the hose so as to allow the wire to extend continuously therealong. Unlike the present invention, there do not appear to be longitudinal channels that “extends outwardly” of the tubular body. The longitudinal channels would not, in any way, communicate with the interior passageway of the hose or else the wire could be contaminated. It appears to be the purpose of the Masui patent is to isolate the electrical line from the fluid passing through the interior passageway. There is no suggestion in the Masui patent for the use of a single tendon or grout material therein.

The prior art Sorkin '139 patent does disclose the use of a tendon-receiving duct in association with an anchor assembly. This duct includes a plurality of corrugations extending outwardly therefrom. However, there are no “longitudinal channels” illustrated as extending outwardly of the duct. Additionally, as can be seen from the construction of the anchor associated with the duct in the Sorkin '139 patent, the duct is not of a “circular” configuration. In actual practice, this duct would be of a rather oval configuration. The Sorkin '139 patent particularly illustrates the application of the duct to receiving multiple tendons. The title of the invention identified in the Sorkin '139 patent is associated with a “Multi-Strand Anchorage System”.

Finally, the Sorkin '233 patent discloses a tendon-receiving duct having longitudinal channels extending therealong. However, as illustrated in Figure 7 of this patent, a plurality of tendons are received on the interior of the duct. Additionally, as is stated in the specification of this patent, in column 6, lines 53 - 56:

The longitudinal channels 28, 30 and 32 extend outwardly of the wall portion 34 of the tubular body 22 by a distance equal to the

distance that the plurality of corrugations 24 extend outwardly of the tubular body 22. [Emphasis supplied.]

Relative to the independent claim herein, Applicant has amended original independent Claim 1 so as to incorporate the limitations of dependent Claims 3 and 4, along with a portion of the limitations of dependent Claim 6. As such, independent Claim 21 indicates that the channels extends “outwardly of the tubular body by a distance less than a distance that the plurality of corrugations extend outwardly of the tubular body”. Independent Claim 21 also emphasizes that the channels extend for the “entire length of the tubular body”. Finally, it is indicated that the channels are “in fluid communication” with the interior passageway. New independent Claim 29 emphasizes that the tubular body has “a circular cross section” and that the longitudinal channels are “in fluid communication with the interior passageway”. Independent Claim 29 also claims the “single tendon” and the “grout material”.

Independent Claim 31 emphasizes that the channels are “in fluid communication” with the interior passageway. Further, independent Claim 31 recites that the plurality of corrugations has “a flat outer surface”. Independent Claim 31 further recites that the channels extend outwardly of the tubular body “by a distance less than a distance that the plurality of corrugations extend outwardly of the tubular body”. Finally, independent Claim 31 recites that the tubular body has “a circular cross-section in a plane transverse to the longitudinal axis. Applicant respectfully contends that these features serve to distinguish the important aspects of the present invention from the prior art combination.

Relative to the prior art rejections, independent Claim 21 is distinguishable from the Bauman patent since the Bauman patent does not disclose that the channels extend for “the entire length of

the tubular body”. Since the Bauman patent is intended for the movement of air and for flexibility, Applicant respectfully contends that there would be no reason for one having ordinary skill in the art of the other patents to combine the “flexible corrugated tubing” so as to have the characteristics of the present invention. Independent Claim 21 is distinguishable from the Masui patent individually, or in combination with the other references, since the longitudinal channels are indicated as being “in fluid communication with the interior passageway”. Additionally, independent Claim 21 is distinguishable from the Masui patent since the longitudinal channels are indicated as extending “outwardly of the tubular body”. Independent Claim 21 is distinguishable from the prior art Sorkin ’139 patent since “a plurality of longitudinal channels” is claimed. Additionally, independent Claim 21 is distinguishable from the prior art Sorkin ’233 patent since the longitudinal channels “extend outwardly of the tubular body by a distance less than a distance that the plurality of corrugations extends outwardly of the tubular body”.

Independent Claim 29 is distinguishable from either of the Masui or Bauman patents since independent Claim 29 includes the “single tendon” and the “grout material”. Independent Claim 29 is distinguishable from the Sorkin’139 patent since it is indicated that the tubular body has a “circular cross section”. Independent Claim 29 also claims the longitudinal channels. Independent Claim 29 also limits the apparatus to “a single tendon”. Additionally, independent Claim 29 is distinguishable from the Sorkin ’233 patent in view of the “single tendon” extending through the interior passageway.

Independent Claim 31 is distinguishable from the Bauman patent by reciting that each of the corrugations has a “flat outer surface”. Independent Claim 31 is distinguishable from the Masui patent since it is indicated the longitudinal channels are in “fluid communication” with the interior

passageway. Additionally, the Masui patent lacks the “flat outer surface” on the plurality of corrugations. Independent Claim 31 is distinguishable from the Sorkin ’139 patent as having a tubular body with a “circular cross section”, as having “longitudinal channels”, and as having longitudinal channels that extend outwardly of the tubular body by a distance less than a distance that the plurality of corrugations extends outwardly of the tubular body. Finally, independent Claim 31 is distinguishable from the Sorkin ’233 in view of the fact that longitudinal channels extend outwardly of the tubular body “by a distance less than a distance that the plurality of corrugations extends outwardly of the tubular body”.

Fundamentally, in terms of function and in terms in results achieved, the prior art combination could not provide a duct that can easily be self-tapped onto a suitable coupler mechanism. With the Sorkin ’233, any self-tapping coupler would tend to dig into the outwardly extending longitudinal channels. The Sorkin ’139 patent could not be rotated and, as such, could not be used in association with a “self-tapping coupler”. The Sorkin ’139 patent, individually, or in combination with the other references, would still lack longitudinal channels in fluid communication with the interior passageway. The Bauman and Masui patents, in combination, would not be used in association with conveying grout and retaining a single tendon therein.

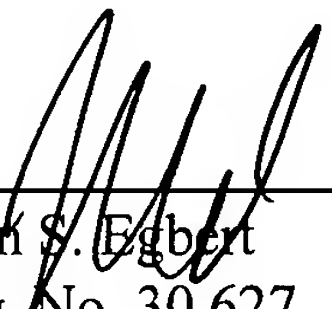
Relative to the present claims, dependent Claim 22 corresponds to the limitations of original dependent Claim 2. Dependent Claims 23 - 28 correspond, respectively, to the limitations of dependent Claims 23 - 28. Dependent Claim 30 corresponds to the limitations of original dependent Claim 12. Dependent Claims 32 - 38 correspond, respectively, to limitations of original dependent Claims 14 - 20.

So as to avoid any potential "double patenting" rejections, Applicant is enclosing herewith a suitable Terminal Disclaimer relative to the Sorkin '233.

Based upon the foregoing analysis, Applicant contends that independent Claims 21, 29 and 31 are now in proper condition for allowance. Additionally, those claims which are dependent upon these independent claims should also be in condition for allowance. Reconsideration of the rejections and allowance of the claims at an early date is earnestly solicited. Since a Terminal Disclaimer is enclosed herewith, an additional fee of \$55 is enclosed herewith.

Respectfully submitted,

10.27.04
Date



John S. Egbert
Reg. No. 30,627
Andrew W. Chu
Reg. No. 46,625
Attorney for Applicant
Harrison & Egbert
412 Main Street, 7th Floor
Houston, Texas 77002
(713)224-8080
(713)223-4873 fax